

# Analisis Hubungan Msp Treponema Denticola dan VtaA Veillonella Parvula dengan Oral Hygiene Index pada Plak Supraringiva Anak Usia 9-12 Tahun = Relationship Between MSP Treponeme Denticola And VTAA Veillonella Parvula And Oral Hygiene Index In Supraringival Plaque Of Children Aage 9-12 Years

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## Abstrak

Latar Belakang: Permasalahan gigi dan mulut pada anak di usia mixed dentition di Indonesia masih tinggi, salah satunya di daerah Jawa Barat. Permasalahan gigi dan mulut dapat disebabkan oleh status kesehatan oral yang buruk. Status kesehatan oral dapat dinilai dari nilai OHI-S. Status kesehatan mulut buruk ditandai dengan penumpukan plak (salah satunya plak supraringiva) dapat menyebabkan peningkatan jumlah bakteri, salah satunya bakteri Veillonella parvula. Bakteri Veillonella parvula berperan dalam proses adhesi dan metabolisme bakteri late colonizer seperti Treponema denticola yang berperan dalam patogenesis penyakit periodontal. Bakteri Veillonella parvula dan Treponema denticola memiliki protein berupa VtaA dan Msp yang berperan dalam proses adhesi ke biofilm. Sampai saat ini, belum ada penelitian yang meneliti hubungan kedua protein tersebut dengan status kebersihan rongga mulut. Tujuan: Mengetahui apakah ada hubungan dan korelasi antara ekspresi gen Msp dan VtaA dengan status kebersihan rongga mulut. Metode: Penelitian menggunakan 40 sampel plak supraringiva yang diambil dari anak berusia 9-12 tahun di SD Sukaluyu dan dikelompokkan berdasarkan kategori skor OHI-S. Sampel kemudian diekstraksi RNA dan DNA, lalu dianalisis menggunakan Real Time PCR. Hasil kuantifikasi DNA dianalisis menggunakan absolute quantification untuk mengidentifikasi jumlah bakteri, sedangkan hasil kuantifikasi RNA dianalisis menggunakan relative quantification untuk membandingkan ekspresi gen. Hasil: Terdapat korelasi positif bermakna ( $p=0.008$ ) antara jumlah bakteri Treponema denticoladengan memburuknya nilai OHI-S. Terdapat perbedaan bermakna antara jumlah bakteri Treponema denticola pada OHI-S sedang dan buruk ( $p=0.016$ ). Korelasi positif tidak signifikan ada pada jumlah bakteri Veillonella parvula dan ekspresi gen Msp, sedangkan korelasi negatif tidak signifikan ditemukan pada VtaA. Kesimpulan: Ada hubungan antara menambahnya jumlah bakteri Treponema denticola seiring dengan memburuknya status kesehatan oral. Tidak ditemukan korelasi dan perbedaan antara jumlah bakteri Veillonella parvula, ekspresi gen Msp dan VtaA jika dibandingkan dengan kategori OHI-S.

.....Latar Belakang: Dental and oral problems in children with mixed dentition in Indonesia are still highly prevalent, especially in West Java. These problems are caused by poor oral health status, which can be assessed by OHI-S score. Poor oral health status, which is characterized by plaque accumulation, can cause the quantity of bacteria in mouth to increase. One of those bacterias is Veillonella parvula, a bacteria which plays a role in the adhesion process and metabolism of late colonizer bacteria. Treponema denticola is a late colonizer bacteria which contributes to the progression of periodontal diseases. In order to adhere to a biofilm, Treponema denticola produces protein called Msp, while Veillonella parvula produces VtaA. However, the relationship between these proteins to oral health status has not been well studied. Objective : The aim of this study is to analyze the relationship and correlation between Msp and VtaA gene expression and oral health status. Methods: 40 samples are collected from supraringival plaque of children between the

ages of 9-12 years old in SD Sukaluyu and grouped into 3 categories (poor, moderate, good) based on each samples' OHI-S score. Samples are then extracted and analyzed by real-time PCR. DNA quantification results are analyzed using absolute quantification to identify the amount of bacteria present. RNA quantification results are analyzed using relative quantification to identify each gene expression relative to calibrator samples. Results: There is a significant positive correlation ( $p=0.008$ ) found between the quantity of *Treponema denticola* and OHI-S score. A significant difference ( $p=0.016$ ) is found between the amount of *Treponema denticola* in moderate OHI-S and poor OHI-S category. There is a non-significant positive correlation between the amount of *Veillonella parvula* and Msp gene expression and OHI-S score. VtaA gene expression showed a non-significant negative correlation. Conclusion: This study demonstrated there is a relationship between the increasing quantity of *Treponema denticola* and the worsening state of oral health status. There is no relationship between Msp and VtaA gene expression and the quantity of *Veillonella parvula* and oral health status.